APPENDIX B

LOGS OF BORINGS

MAJOR DIVISIONS					TYPICAL NAMES
COARSE-GRAINED SOILS (MORE THAN HALF IS LARGER THAN NO 200 SIEVE)	GRAVELS (MORE THAN HALF COARSE FRACTION IS LARGER THAN No 4 SIEVE SIZE)	CLEAN GRAVELS WITH LITTLE OR NO FINES	GW		WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES
			GP		POORLY GRADED GRAVELS, GRAVEL-SAND MIXTURES
		GRAVELS WITH OVER 12% FINES	GM		SILTY GRAVELS, POORLY GRADED GRAVEL-SAND-SILT MIXTURES
			GC		CLAYEY GRAVELS, POORLY GRADED GRAVEL-SAND-CLAY MIXTURES
	SANDS (MORE THAN HALF COARSE FRACTION IS SMALLER THAN NO 4 SIEVE SIZE)	CLEAN SANDS WITH LITTLE OR NO FINES	SW		WELL-GRADED SANDS, GRAVELLY SANDS
			SP		POORLY GRADED SANDS, GRAVELLY SANDS
		SANDS WITH OVER 12% FINES	SM		SILTY SANDS, POORLY GRADED SAND-SILT MIXTURES
			SC		CLAYEY SANDS, POORLY GRADED SAND-CLAY MIXTURES
FINE-GRAINED SOILS (MORE THAN HALF IS SMALLER THAN NO 200 SIEVE)	SILTS AND CLAYS (LIQUID LIMIT 50% OR LESS)		ML		INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS, OR CLAYEY SILTS WITH SLIGHT PLASTICITY
			CL		INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
			OL		ORGANIC CLAYS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS (LIQUID LIMIT GREATER THAN 50%)		MH		INORGANIC SILTS, MICACEOUS OR DIATOMACIOUS FINE SANDY OR SILTY SOILS, ELASTIC SILTS
			CH		**INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS**
			OH		ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS			Pt		PEAT AND OTHER HIGHLY ORGANIC SOILS

UNIFIED SOIL CLASSIFICATION SYSTEM


"Undisturbed" Sample


Bulk or Classification Sample


Cake (Suspected BHC-HCB)


Fly Ash


Construction Debris


Observed Water Level in Boring

Perm. Laboratory Permeability

LEGEND FOR ADDITIONAL SYMBOLS USED ON LOGS

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SOIL CLASSIFICATION CHART AND KEY TO TEST DATA

Pine and Tuscarora Site
Niagara Falls, New York

PLATE **B1**

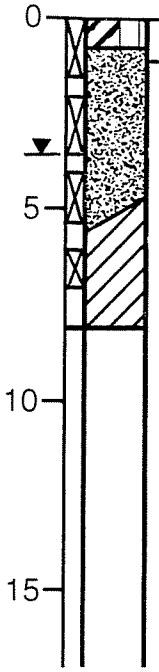
DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
CS	17497,001.12	RH	10/11/85	DA	7/22/86

LOG OF BORING A4

Equipment Hollow-Stem Auger

Elevation - Date 6/7/85

Blows/foot	PID Headspace (ppm)	PID Background (ppm)
	5.0(A)	
12	9.0(B)	1.0
26	16.5	1.0
14	12.6	1.0
14	5.5	1.0



INTERMIXED BROWN CLAY AND CLAYEY SILT
stiff, dry — Fill
WHITE CAKE
medium dense, moist, gray below 4 feet
RED-BROWN SILTY CLAY (CL)
stiff, moist, with roots

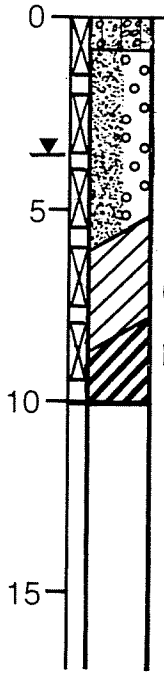
End of Boring - 7 feet

LOG OF BORING B2

Equipment Hollow-Stem Auger

Elevation - Date 7/2/85

Blows/foot	PID Headspace (ppm)	PID Background (ppm)
	0.9(A)	
16	1.0(B)	0.9
25	1.0	0.9
7	3.2	0.9
6	1.6	0.7
8	5.7	0.8



BROWN SILTY GRAVELLY SAND
loose, dry
GRAY CAKE AND LIME GRIT — Fill
medium dense, moist
loose, saturated below 4 feet
gravelly 4.5 to 5 feet
intermixed with black fill at 5.5 feet
GRAY SILTY CLAY (CL)
stiff, saturated
RED-BROWN CLAY (CH)
stiff, saturated, with some silt
End of Boring - 10 feet

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LOGS OF BORINGS A4 and B2
Pine and Tuscarora Site
Niagara Falls, New York

PLATE **B2**

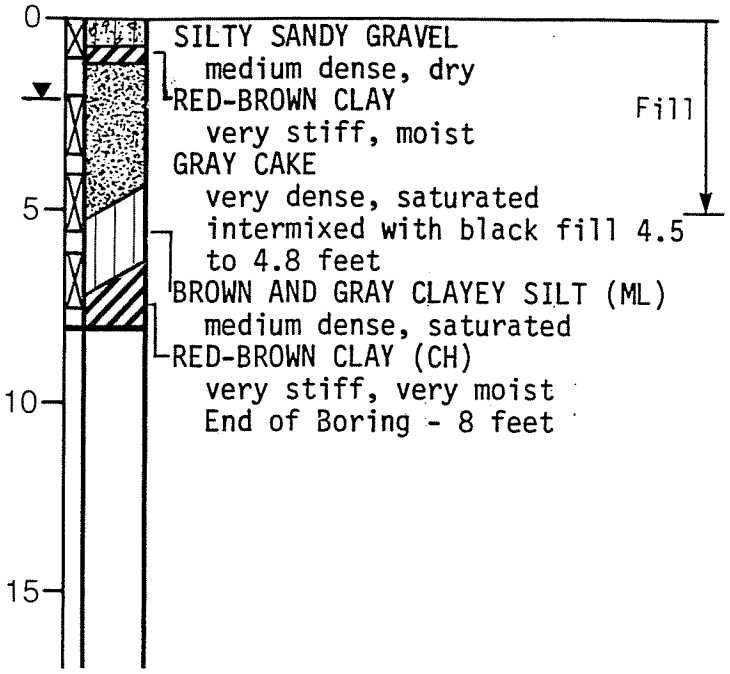
DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
EB.	17497,001.12		10/10/85		

LOG OF BORING B3

Equipment Hollow-Stem Auger

Elevation - Date 6/27/85

Blows/foot	PID Headspace (ppm)	PID Background (ppm)
	4.9(A)	
24	4.2(B)	1.0
38	4.8	0.9
	7.6(A)	
21	5.3(B)	0.8
	42(A)	
10	36(B)	1.0

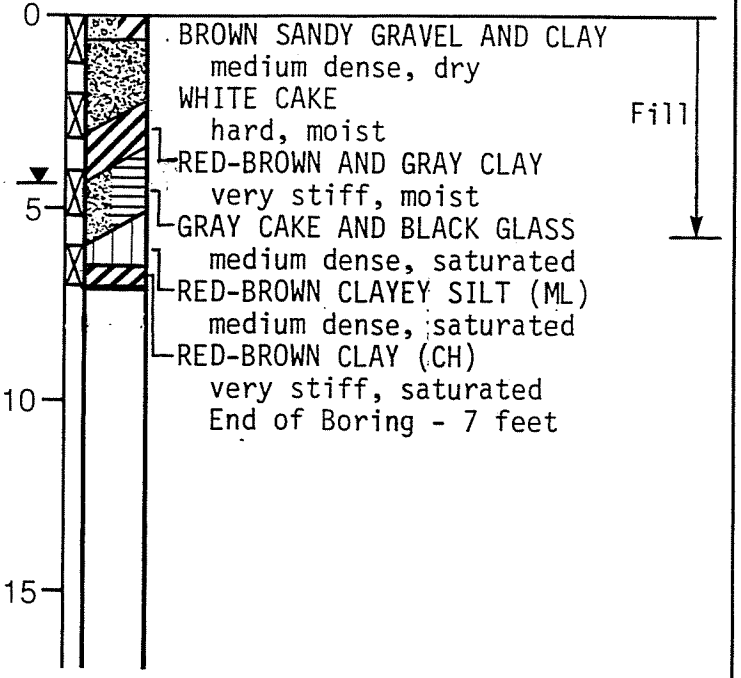


LOG OF BORING B4

Equipment Hollow-Stem Auger

Elevation - Date 6/27/85

Blows/foot	PID Headspace (ppm)	PID Background (ppm)
20	6.1	1.0
	15.5(A)	
45	5.6(B)	1.0
10	4.3	0.9
	5.4(A)	
17	3.2(B)	1.1



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LOGS OF BORINGS B3 and B4

Pine and Tuscarora Site
Niagara Falls, New York

PLATE
B3

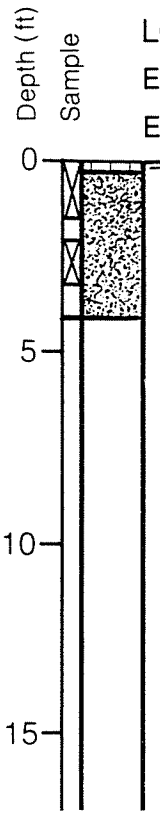
DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
	17497,001.12	VJH	10/10/85		

LOG OF BORING B5

Equipment Hollow-Stem Auger

Elevation - Date 7/3/85

Blows/foot	PID Headspace (ppm)	PID Background (ppm)
	2.3(A)	
45	31(B)	0.8
77	92	0.8



CLAYEY SILT
dense, slightly moist
WHITE CAKE
very dense, moist
obstruction at 3.9 feet
End of Boring - 4 feet

Fill

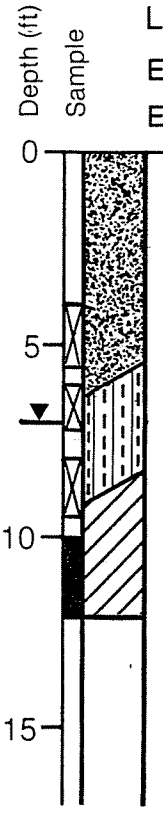
LOG OF BORING B5A

Equipment Hollow-Stem Auger

Elevation - Date 7/3/85

Blows/foot	PID Headspace (ppm)	PID Background (ppm)
	12.3(A)	
31	3.6(B)	0.8
5	6.9	0.7
	16.6(A)	
5	2.2(B)	0.7

Perm.
8.8×10^{-8} cm/sec



Note: Drilled to 4 feet without sampling.

Fill

WHITE CAKE
dense, moist, intermixed with black fill 5 to 5.25 feet
ORGANIC DARK GRAY SILTY CLAY (OL)
soft, moist, with roots in upper 4 inches
sandy 8.4 to 8.7 feet
BROWN CLAY WITH SILT (CL)
very soft, saturated

End of Boring - 12 feet

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LOGS OF BORINGS B5 and B5A

Pine and Tuscarora Site
Niagara Falls, New York

PLATE
B4

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
Eg. Hog.	17497,001.12	KH	10/10/85		

LOG OF BORING C1

Equipment: Hollow-Stem Auger

Elevation: - Date: 7/2/85

Pocket Penetrometer (ksf)	Blows/foot	PID Headspace (ppm)	PID Background (ppm)	Depth (ft)	Sample	
	8	2.6	1.3	0		BROWN SANDY CLAYEY SILT loose, dry, trace gravel, with white and gray cake below 0.5 feet — Fill
	7	2.8(A) 1.8(B)	1.3			
	15	7.6	1.3	5		RED-BROWN CLAY (CH) hard, moist, blocky, with few silt pockets
4.5						End of Boring - 7 feet
Perm. 2.5×10^{-8} cm/sec				10		
				15		

LOG OF BORING C2

Equipment: Hollow-Stem Auger

Elevation: - Date: 6/28/85

Pocket Penetrometer (ksf)	Blows/foot	PID Headspace (ppm)	PID Background (ppm)	Depth (ft)	Sample	
		5.0(A)		0		SILTY SAND AND GRAVEL medium dense, dry, with roots
	21	4.0(B)	0.9			WHITE CAKE medium dense, moist
	12	4.5	1.0			WHITE AND SPECKLED FLY ASH medium dense, layered, saturated — Fill
-		5.3		5		
	29	3.2	1.0			
1.5				10		BROWN CLAY (CH) stiff, saturated
Perm. 3.3×10^{-8} cm/sec						End of Boring - 10 feet
				15		

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LOGS OF BORINGS C1 and C2

Pine and Tuscarora Site
Niagara Falls, New York

PLATE **B5**

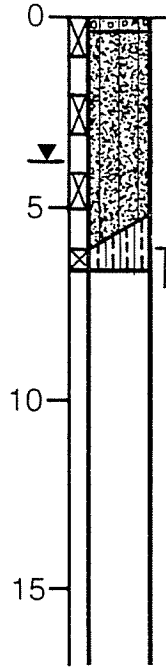
DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
ES.	17497,001.12	KHH	10/10/85		

LOG OF BORING C3

Equipment Hollow-Stem Auger

Elevation - Date 6/28/85

Blows/foot	PID Headspace (ppm)	PID Background (ppm)
	5.7(A)	
10	6.0(B)	1.3
10	5.5	1.6
6	3.7	1.6
-	11.4	1.5



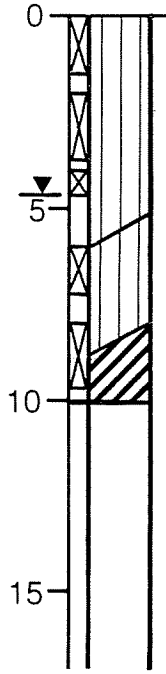
GRAVELLY SILT AND SAND
stiff, dry
WHITE CAKE WITH SOME SILT — Fill
loose to medium dense, dry to 2 feet
moist 2 to 3.75 feet
gray and saturated below 3.75 feet
DARK BROWN ORGANIC CLAY (OL)
soft, saturated
wood encountered at 6.2 feet
End of Boring - 6.2 feet

LOG OF BORING C4

Equipment Hollow-Stem Auger

Elevation - Date 6/27/85

Blows/foot	PID Headspace (ppm)	PID Background (ppm)
	5.1(A)	
13	5.8(B)	1.0
	5.4(A)	
15	4.8(B)	1.0
7	10.2	1.0
10	1.0	0.8
13	3.2	1.0



LIGHT GRAY SILT
medium dense, dry to 3 feet
intermixed with white cake 0.3 to 5.8 feet — Fill
intermixed with black glassy fill 2.0 to 3.8 feet
GRAY CLAYEY SILT (ML)
medium dense, saturated

RED-BROWN CLAY (CH)
stiff, saturated
End of Boring - 10 feet

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LOGS OF BORINGS C3 and C4

Pine and Tuscarora Site
Niagara Falls, New York

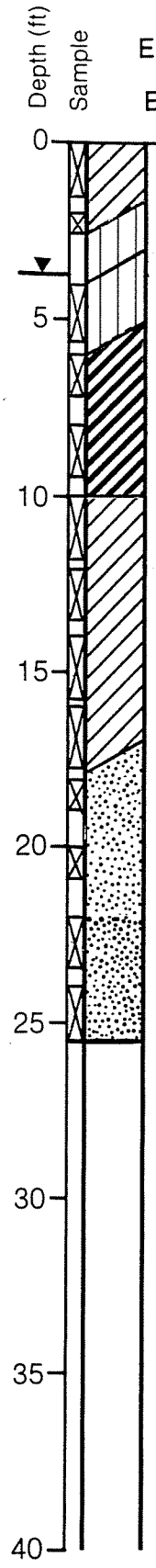
PLATE **B6**

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
ES.	17497,001.12	KJH	10/10/85		

Equipment Hollow-Stem Auger D1

Elevation - Date 7/2/85

Blows/foot	PID Headspace (ppm)	PID Background (ppm)
10	2.3	1.3
16	4.4	1.2
5	4.1	1.3
26	2.4	1.3
22	2.4	1.3
7	2.9	1.4
5	3.4	1.3
3	3.2	1.3
6	3.7	1.3
2	15.3	1.3
13	6.2	1.2
41	2.5	1.2
43	3.2	1.0



LIGHT BROWN AND BROWN SILTY CLAY
stiff, moist, dry in top 6 inches

LIGHT BROWN CLAYEY SILT (ML)
medium dense, moist

LIGHT BROWN AND GRAY SANDY SILT (ML)
loose, saturated

RED-BROWN CLAY (CH)
very stiff, moist, with few sandy silt pockets

BROWN SILTY CLAY (CL)
medium stiff, saturated
very silty with trace of sand from 12.8 to 13.3 feet

BROWN SILTY GRAVELLY SAND (SW)
loose to 20 feet, saturated

medium dense 20 to 23 feet

gravel is mainly black metamorphic rock

dense below 23 feet
very gravelly 23 to 23.6 feet

End of Boring 25.6 feet

Bedrock encountered at 25.6 feet.

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LOG OF BORING D1

Pine and Tuscarora Site
Niagara Falls, New York

PLATE
B7

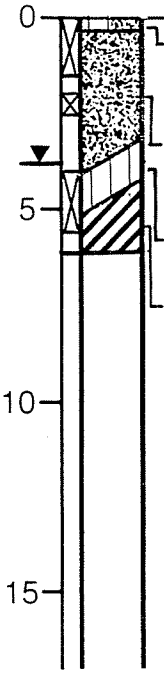
DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
Tg. Kg.	17497,001.12	RH	10/10/85		

LOG OF BORING D2

Equipment: Hollow-Stem Auger

Elevation: - Date: 6/28/85

Blows/foot	PID Headspace (ppm)	PID Background (ppm)
16	4.3	1.2
16	4.1	1.0
	2.7(A)	
3	4.7(B)	1.2



0 – INTERMIXED SANDY SILT AND WHITE CAKE — Fill
loose, dry with roots

WHITE CAKE
medium dense, moist 1.5 to 3.7 feet

5 – DARK GRAY CLAYEY SILT (ML)
loose, saturated, trace sand

RED-BROWN CLAY (CH)
stiff, very moist

10 – End of Boring - 6 feet

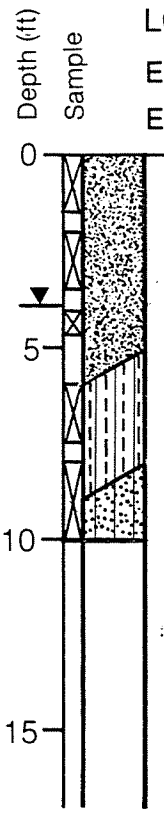
15

LOG OF BORING D3

Equipment: Hollow-Stem Auger

Elevation: - Date: 6/28/85

Blows/foot	PID Headspace (ppm)	PID Background (ppm)
	6.7(A)	
8	3.0(B)	1.6
9	4.7	1.2
7	4.3	1.4
	13.6(A)	
7	5.4(B)	1.3
	3.0(A)	
5	1.6(B)	1.3



0 – WHITE CAKE
loose, moist, mixed with gravel to 0.35 feet — Fill
gray and saturated below 4 feet

5 – DARK GRAY ORGANIC CLAYEY SILT (OL)
loose, saturated, with roots
gray and less silty 7 to 7.3 feet

LIGHT BROWN SILTY SAND (SM)
loose, saturated, trace clay

10 – End of Boring - 10 feet

15

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LOGS OF BORINGS D2 and D3

Pine and Tuscarora Site
Niagara Falls, New York

PLATE **B8**

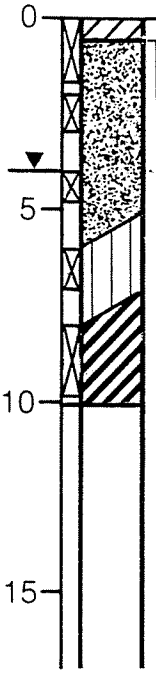
DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
Cy. Hz.	17497,001.12	KWH	10/11/85		

LOG OF BORING D4

Equipment Hollow-Stem Auger

Elevation - Date 6/27/85

Blows/foot	PID Headspace (ppm)	PID Background (ppm)
	8.0(A)	
16	3.2(B)	1.2
6	5.2	1.3
7	6.7	1.2
6	5.9	1.2
	4.5(A)	
13	3.6(B)	1.1



BROWN TOPSOIL AND SILTY CLAY
stiff, dry
WHITE CAKE
loose, moist
saturated below 4 feet
Fill

DARK GRAY CLAYEY SILT (ML)
loose, saturated

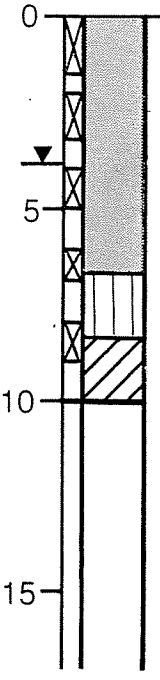
GRAY CLAY (CH)
stiff, saturated
red-brown, very stiff below 9 feet
End of Boring - 10 feet

LOG OF BORING D5

Equipment Hollow-Stem Auger

Elevation - Date 7/10/85

Blows/foot	PID Headspace (ppm)	PID Background (ppm)
8	0.4	0.3
7	0.4	0.3
7	0.6	0.3
	0.4(A)	
4	0.4(B)	0.4
	0.4(A)	
5	0.4(B)	0.4



FLY ASH
loose, moist
brown clayey silt to 1.5 inches
clayey 1.1 to 1.3 feet

DARK GRAY CLAYEY SILT (ML)
loose, saturated, with wood fibers

RED-BROWN SILTY CLAY (CL)
soft, saturated
End of Boring - 10 feet

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LOGS OF BORINGS D4 and D5

Pine and Tuscarora Site
Niagara Falls, New York

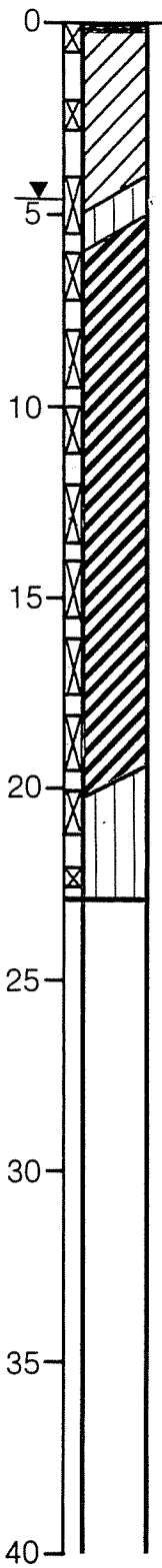
PLATE
B9

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
Eg Hg.	17497,001.12	GH	10/10/85		

Equipment Hollow-Stem Auger E1

Elevation - Date 6/25/85

Blows/foot	PID Headspace (ppm)	PID Background (ppm)
19	0.2	0.2
10	0.3	0.2
6	1.5(A) 0.7(B)	0.3
26,	4.0	0.4
26	7.2	0.4
11	0.2	0.2
3	0.2	0.2
1	0.4	0.2
3	0.2	0.2
WH*	1.3	0.2
12	1.7	0.2
35/3"	60	0.1



3-Inch Paving (Asphalt)
GREEN GRAY SILTY CLAY (CL)
stiff, dry, moist 2 to 4.7 feet

GREEN GRAY SANDY SILT (ML)
loose, saturated

RED-BROWN CLAY (CH)
very stiff, saturated, with trace silt

with iron nodules 8 to 9.5 feet

stiff 10 to 12 feet

soft below 12 feet

CLAYEY SANDY SILT (ML)
medium dense, saturated, trace gravel

End of Boring - 22.75 feet

Bedrock encountered at 22.75 feet.

WH* - Weight of Hammer

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LOG OF BORING E1

Pine and Tuscarora Site
Niagara Falls, New York

PLATE
B10

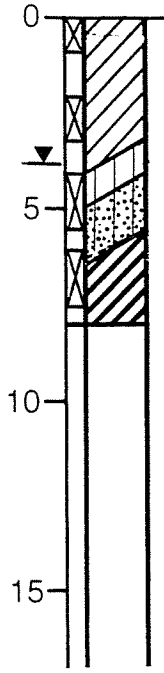
DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
Tg. Hg.	17497,001.12	KH	10/10/85		

LOG OF BORING E2

Equipment Hollow-Stem Auger

Elevation - Date 6/27/85

Blows/foot	PID Headspace (ppm)	PID Background (ppm)
22	2.6	1.6
13	1.4	1.2
6	18	1.3
41	34	1.1



BROWN AND GRAY SILTY CLAY (CL)
very stiff, moist, gravelly to 0.5 feet

GRAY CLAYEY SILT (ML)
loose, saturated

GRAY SILTY SAND WITH CLAY (SM)
loose, saturated

RED-BROWN CLAY (CH)
very stiff, saturated

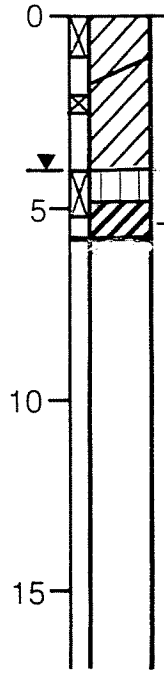
End of Boring - 8 feet

LOG OF BORING E3

Equipment Hollow-Stem Auger

Elevation - Date 6/26/85

Blows/foot	PID Headspace (ppm)	PID Background (ppm)
21	5.6	0.6
17	5.1	0.8
15	22(A) 44(B)	0.8



LIGHT BROWN SILTY CLAY
very stiff, moist — Fill

BROWN SANDY CLAY
very stiff, moist, trace gravel

DARK BROWN SANDY SILT (ML)
medium dense, saturated

RED-BROWN CLAY (CH)
stiff, moist

End of Boring - 5.5 feet

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LOGS OF BORINGS E2 and E3

Pine and Tuscarora Site
Niagara Falls, New York

PLATE **B11**

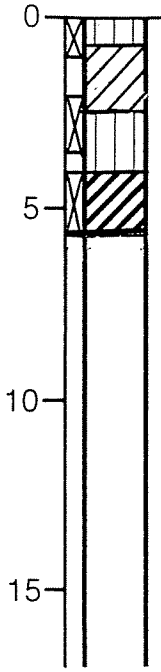
DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
ES.	17497,001.12	KH	10/11/85		

LOG OF BORING E4

Equipment Hollow-Stem Auger

Elevation - Date 6/26/85

Blows/foot	PID Headspace (ppm)	PID Background (ppm)
18	9.0(A) 16.0(B)	0.8
10	46	1.2
22	8.0	0.8



BROWN SANDY SILT — Fill
medium dense, dry, trace gravel

RED-BROWN AND GRAY SILTY CLAY (CL)
stiff, moist

GRAY-GREEN CLAYEY SILT (ML)
medium dense, moist

RED-BROWN CLAY (CH)
very stiff, moist

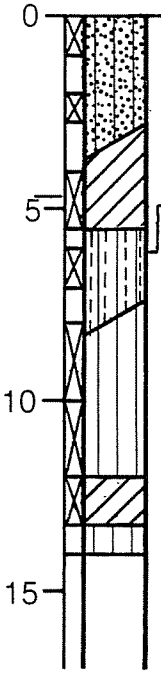
End of Boring - 5.5 feet

LOG OF BORING E5

Equipment Hollow-Stem Auger

Elevation - Date 6/26/85

Blows/foot	PID Headspace (ppm)	PID Background (ppm)
18	10.8 12.3(A)	1.0
10	9.4(B)	1.2
7	34	0.9
4	28	1.0
5	31(A) 8.8(B)	0.8
4	11.7 5.2(A)	1.0
2	4.6(B)	1.0



LIGHT GRAY SILTY SAND
medium dense, dry, trace gravel
Fill

BROWN SILTY CLAY (CL)
medium stiff, moist

DARK GRAY ORGANIC CLAYEY SILT (OL)
loose, saturated, with roots and trace gravel

DARK GRAY CLAYEY SILT (ML)
loose, saturated
sandy 9.5 to 10 feet

RED-BROWN CLAY WITH SOME SILT (CL)
soft, saturated

DARK GRAY CLAYEY SANDY SILT (ML)
loose, saturated, with small teeth

End of Boring - 14 feet

Harding Lawson Associates
Engineers, Geologists & Geophysicists

LOGS OF BORINGS E4 AND E5

Pine and Tuscarora Site
Niagara Falls, New York

PLATE
B12

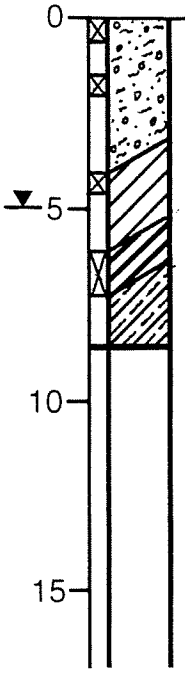
DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
es.	17497,001.12	KJH	10/11/85		

LOG OF BORING E6

Equipment Hollow-Stem Auger

Elevation - Date 6/27/85

Blows/foot	PID Headspace (ppm)	PID Background (ppm)
12	1.6	1.0
3	1.6	1.2
4	5.9	1.4
	43(A)	
5	8.0(B)	1.4



CLAYEY CONSTRUCTION DEBRIS AND GRAVEL
loose, dry to 2 feet

Fill

BROWN SILTY CLAY
soft, moist

RED-BROWN CLAY
soft, saturated

BROWN ORGANIC CLAY (OH)
soft, saturated

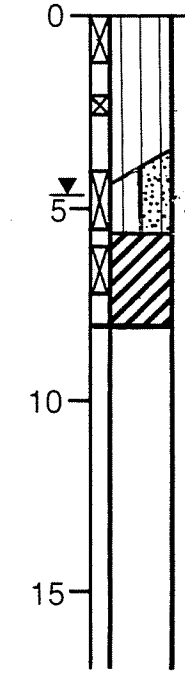
End of Boring - 7.5 feet

LOG OF BORING F2

Equipment Hollow-Stem Auger

Elevation - Date 7/1/85

Blows/foot	PID Headspace (ppm)	PID Background (ppm)
	4.0(A)	
15	1.7(B)	1.0
13	42	1.3
	14.6(A)	
6	16.3(B)	1.7
38	13.6	1.6



BROWN GRAVELLY SILT
medium dense, dry

Fill

GRAY AND LIGHT BROWN INTERLAYERED SANDY SILT (ML) AND SILTY SAND (SM)
loose, saturated

RED-BROWN CLAY (CH)
hard, moist, with few silt pockets

End of Boring - 8 feet

Harding Lawson Associates
Engineers, Geologists & Geophysicists

LOGS OF BORINGS E6 AND F2

Pine and Tuscarora Site
Niagara Falls, New York

PLATE
B13

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
ES.	17497,001.12	KJH	10/11/85		

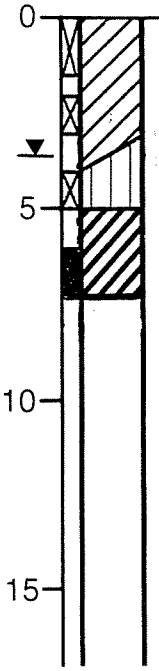
LOG OF BORING F3

Equipment Hollow-Stem Auger

Elevation - Date 7/1/85

Blows/foot	PID Headspace (ppm)	PID Background (ppm)
21	0.8	0.7
20	0.9	0.9
	6.0(A)	
10	42(B)	1.0

Perm.
3.3×10^{-8} cm/sec



BROWN SILTY CLAY (CL)
very stiff, dry, moist below 2 feet

GRAY SANDY SILT (ML)
medium dense, saturated

RED-BROWN CLAY (CH)
very stiff, moist

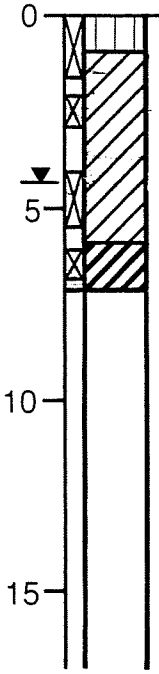
End of Boring - 7.4 feet

LOG OF BORING F4

Equipment Hollow-Stem Auger

Elevation - Date 6/26/85

Blows/foot	PID Headspace (ppm)	PID Background (ppm)
13	7.1	1.2
17	17	1.2
6	64	1.2
	87	1.4



LIGHT BROWN SANDY CLAYEY SILT
medium dense, moist Fill

BROWN AND GRAY SILTY CLAY (CL)
stiff, moist
silty, medium stiff, and saturated below 4 feet

RED-BROWN CLAY (CH)
very stiff, moist

End of Boring - 7 feet

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Engineers, Geologists & Geophysicists

LOGS OF BORINGS F3 AND F4

Pine and Tuscarora Site
Niagara Falls, New York

PLATE **B14**

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
ES.	17497,001.12	KH	10/11/85		

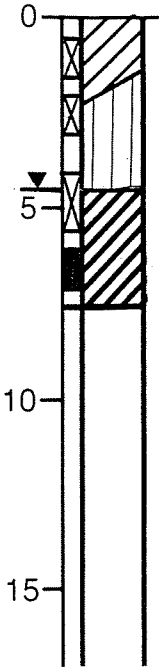
LOG OF BORING F5

Equipment Hollow-Stem Auger

Elevation - Date 6/29/85

Blows/foot	PID Headspace (ppm)	PID Background (ppm)
11	3.3	1.0
6	17	1.0
15	12.2(A) 10.1(B)	1.0

Perm.
4.4×10^{-8} cm/sec



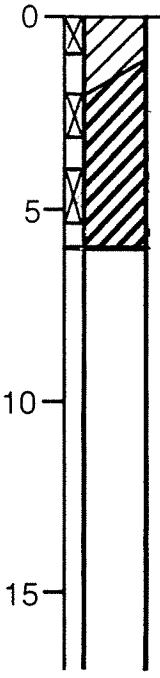
BROWN SILTY CLAY Fill
stiff, moist, trace of gravel
BROWN CLAYEY SILT (ML)
medium dense, moist
loose to 3 feet
saturated sand seam 4.7 to 4.8 feet
RED-BROWN CLAY (CH)
very stiff, saturated
End of Boring - 7.6 feet

LOG OF BORING F6

Equipment Hollow-Stem Auger

Elevation - Date 6/29/85

Blows/foot	PID Headspace (ppm)	PID Background (ppm)
19	2.1	1.3
13	2.2	1.3
6	3.4(A) 3.1(B)	1.3



RED-BROWN AND DARK BROWN GRAVELLY SILTY CLAY Fill
very stiff, moist
RED-BROWN AND DARK GRAY CLAY (CH)
stiff, moist, trace silt

End of Boring - 6 feet

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LOGS OF BORINGS F5 AND F6

Pine and Tuscarora Site
Niagara Falls, New York

PLATE
B15

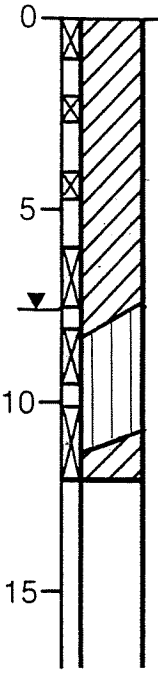
DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
CL	17497,001.12	KH	10/11/85		

LOG OF BORING F7

Equipment: Hollow-Stem Auger

Elevation: - Date: 7/1/85

Blows/foot	PID Headspace (ppm)	PID Background (ppm)
	5.9(A)	
19	2.4(B)	1.2
15	5.1	1.2
	10.3(A)	
3	3.5(B)	1.3
	6.8(A)	
8	4.1(B)	1.3
4	6.4	1.3
	7.4(A)	
4	3.9(B)	1.3



RED-BROWN SILTY CLAY
stiff, moist, with white grit below 4.3 feet
medium stiff below 3 feet
Fill

DARK GRAY ORGANIC SILTY CLAY (OL)
soft, saturated, with roots and wood fragments

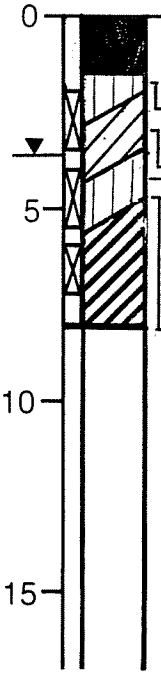
RED-BROWN AND GRAY CLAY (CL)
soft, saturated
End of Boring - 12 feet

LOG OF BORING G2

Equipment: Hollow-Stem Auger

Elevation: - Date: 7/1/85

Blows/foot	PID Headspace (ppm)	PID Background (ppm)
	3.6(A)	
9	1.9(B)	1.8
	2.2(A)	
6	1.7(B)	1.4
38	42	1.6



ASPHALT PAVING AND STABILIZED BASE
Fill

VERY DARK GRAY CLAYEY SILT
loose, moist

LIGHT GRAY AND BROWN SILTY CLAY (CL)
stiff, moist

LIGHT GRAY CLAYEY SILT (ML)
loose, saturated
sandy 5.4 to 5.9 feet

RED-BROWN CLAY (CH)
hard, moist, with very few silt pockets
End of Boring - 8 feet

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LOGS OF BORINGS F7 AND G2

Pine and Tuscarora Site
Niagara Falls, New York

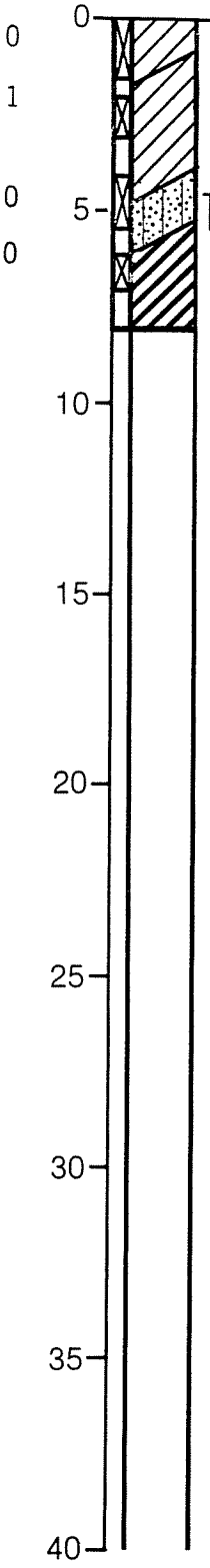
PLATE **B16**

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
ES.	17497,001.12	KH	10/10/85		

Equipment Hollow-Stem Auger G3

Elevation - Date 7/1/85

Blows/foot	PID Headspace (ppm)	PID Background (ppm)
14	1.6	1.0
19	2.5	1.1
	6.7(A)	
7	1.4(B)	1.0
34	2.6	1.0



BROWN SILTY CLAY — Fill
stiff, moist, with roots and trace gravel

BROWN AND GRAY SILTY CLAY (CL)
very stiff, moist
very silty 4 to 4.5 feet

LIGHT BROWN SILTY SAND (SM)
loose, saturated

RED-BROWN CLAY (CH)
hard, moist, with few silt pockets

End of Boring - 8 feet

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LOG OF BORING G3

Pine and Tuscarora Site
Niagara Falls, New York

PLATE
B17

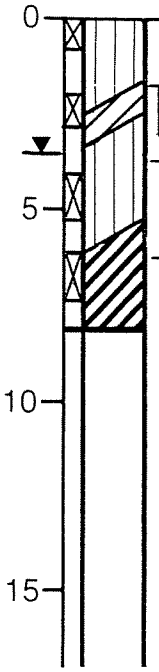
DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
ES.	17497,001.12	KJH	10/11/85		

LOG OF BORING G4

Equipment Hollow-Stem Auger

Elevation - Date 6/26/85

Blows/foot	PID Headspace (ppm)	PID Background (ppm)
22	20	2.0
14	31	2.0
	39(A)	
4	21(B)	2.0
34	23	1.6



LIGHT BROWN CLAYEY SILT
medium dense, dry, trace of gravel and sand — Fill

BROWN SILTY CLAY (CL)
stiff, moist, with sand

BROWN CLAYEY SILT (ML)
loose, saturated
sandy below 5 feet

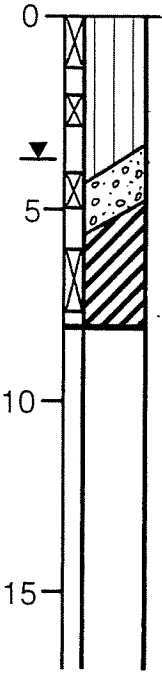
RED-BROWN CLAY (CH)
hard, moist
End of Boring - 7.5 feet

LOG OF BORING G5

Equipment Hollow-Stem Auger

Elevation - Date 6/29/85

Blows/foot	PID Headspace (ppm)	PID Background (ppm)
20	3.0	0.8
8	6.3	0.9
	23(A)	
3	20(B)	1.0
30	2.7	1.1



BROWN CLAYEY SILT
medium dense, dry to moist, trace gravel
loose below 2 feet — Fill

LIGHT BROWN SANDY GRAVEL
loose, saturated, with asphalt below 4.6 feet

RED-BROWN CLAY (CH)
very stiff, saturated
End of Boring - 8 feet

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LOGS OF BORINGS G4 AND G5

Pine and Tuscarora Site
Niagara Falls, New York

PLATE
B18

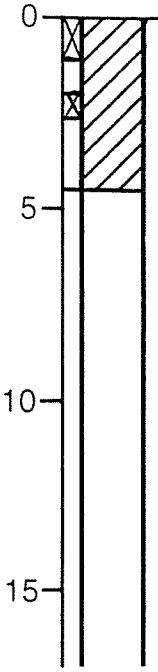
DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
ES	17497,001.12	KH	10/11/85		

LOG OF BORING G6

Equipment Hollow-Stem Auger

Elevation - Date 6/29/85

Blows/foot	PID Headspace (ppm)	PID Background (ppm)
27	14.3	1.0
-	33	1.1



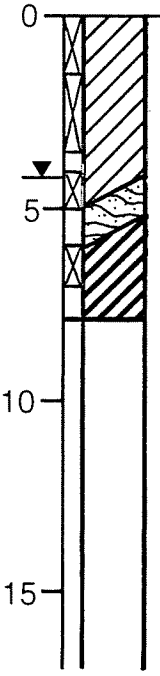
GRAVELLY SILTY CLAY
very stiff, moist, with white grit 2 to 2.2 feet — Fill
Refusal (concrete) encountered at 4.5 feet
End of Boring - 4.5 feet
(Gravel in hole was limestone, concrete, and black slag)

LOG OF BORING G6A

Equipment Hollow-Stem Auger

Elevation - Date 6/29/85

Blows/foot	PID Headspace (ppm)	PID Background (ppm)
15	7.4 1.9(A)	0.9
15	1.1(B) 38(A)	1.0
26	21(B)	1.0
16	37	1.0



BROWN SILTY CLAY
stiff, moist, with sand pockets 3.5 to 4.8 feet

very stiff below 4 feet
BLACK SAND WITH WOOD — Fill
loose, saturated
RED-BROWN CLAY (CH)
very stiff, saturated
End of Boring - 7.5 feet

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LOGS OF BORINGS G6 AND G6A

Pine and Tuscarora Site
Niagara Falls, New York

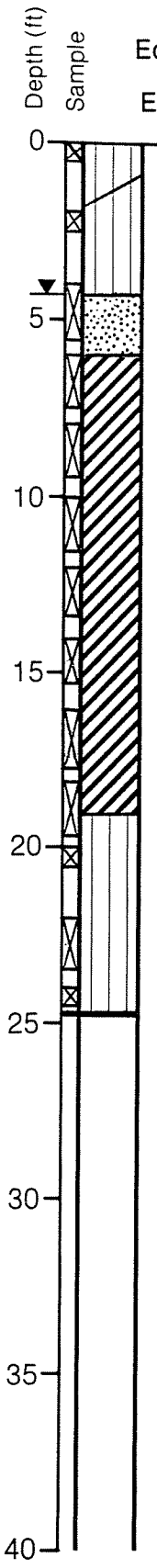
PLATE
B19

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
EB.	17497,001.12	KJH	10/10/85		

Equipment Hollow-Stem Auger H3

Elevation - Date 6/24/85

Blows/foot	PID Headspace (ppm)	PID Background (ppm)
18	8.2	6.0
8	7.6	4.0
6	7.6	4.0
34	22	4.2
39	8.8	2.0
10	21	3.0
5	7.5	2.4
1	7.3	2.4
1	7.4	2.0
2	7.4	2.0
26	8.3	1.0
97	10.3	0.5
-	6.8	0.5



DARK BROWN CLAYEY SILT
medium dense, dry — Fill

DARK BROWN CLAYEY SILT (ML)
loose, moist

BROWN SILTY CLAYEY SAND (SW)
loose, saturated

RED-BROWN CLAY (CH)
hard, saturated

stiff 10 to 12 feet

silty from 11 to 11.5 feet

medium stiff 12 to 13.5 feet
very soft below 13.5 feet

BROWN SANDY CLAYEY SILT (ML)
hard, saturated, trace gravel
loose 19 to 20 feet
medium dense 20 to 21 feet

End of Boring - 24.6 feet

Bedrock encountered at 24.6 feet.

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LOG OF BORING H3

Pine and Tuscarora Site
Niagara Falls, New York

PLATE
B20

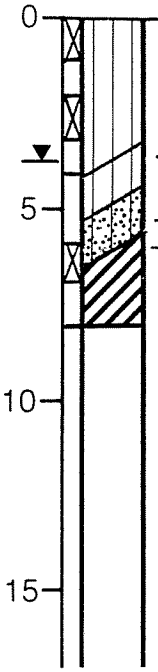
DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
ES.	17497,001.12		10/10/85		

LOG OF BORING H4

Equipment Hollow-Stem Auger

Elevation - Date 6/26/85

Blows/foot	PID Headspace (ppm)	PID Background (ppm)
	9.1(A)	
20	9.3(B)	0.8
16	8.1	2.0
	95(A)	
12	43(B)	2.0
32	95	1.6



GRAVEL AND CLAYEY SILT
medium dense, dry, trace sand
Fill

BROWN CLAYEY SILT (ML)
medium dense, saturated

BROWN SILTY SAND (SM)
medium dense, saturated, with trace clay

RED-BROWN CLAY (CH)
very stiff, moist

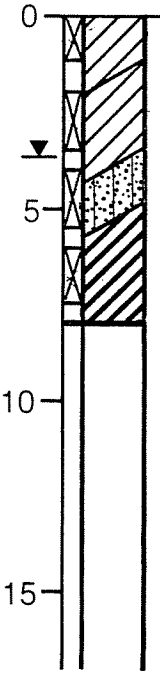
End of Boring - 8 feet

LOG OF BORING H5

Equipment Hollow-Stem Auger

Elevation - Date 7/ 1 /85

Blows/foot	PID Headspace (ppm)	PID Background (ppm)
	4.4(A)	
19	4.7(B)	1.2
14	3.7	1.0
	20(A)	
7	6.5(B)	1.1
40	32	1.1



DARK BROWN SILTY CLAY
very stiff, moist
Fill

LIGHT BROWN AND GRAY SILTY CLAY (CL)
stiff, moist

LIGHT BROWN SILTY SAND (SM)
loose, saturated, trace clay

RED-BROWN CLAY (CH)
hard, moist

End of Boring - 8 feet

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LOGS OF BORINGS H4 AND H5

Pine and Tuscarora Site
Niagara Falls, New York

PLATE
B21

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
EC	17497,001.12	KYH	10/11/85		

Equipment Hollow-Stem Auger H7

Elevation - Date 6/25/85

Blows/foot	PID Headspace (ppm)	PID Background (ppm)	Depth (ft)	Sample	
51	1.6	1.6	0		GRAVEL, SILTY SAND AND CLAY
17	1.2	1.0			Fill
15	1.0	0.2			DARK GRAY SILTY SAND (SM) medium dense, saturated
			5		GREEN-BROWN CLAYEY SILT (ML) soft, saturated
3	3.4	1.0			
3	0.8	0.6			
6	6.0(A) 1.2(B)	0.7	10		RED-BROWN CLAY (CH) medium stiff, saturated
4	3.7	0.3			soft below 14 feet
1	0.9	0.3	15		
WH*	0.4(A) 0.3(B)	0.3			RED-BROWN CLAYEY SILT (ML) soft, saturated, trace sand
45	1.1	0.2			SILTY SAND (SM) dense, saturated
67	31	0.3	20		SANDY GRAVEL WITH TRACE SILT (GW) (gravel composed of dolomite) very dense, saturated
-	3.4	0.3			End of Boring - 23 feet
					Bedrock encountered at 23 feet.
			25		
			30		
			35		
			40		

WH* - Weight of Hammer

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Engineers, Geologists
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LOG OF BORING H7

Pine and Tuscarora Site
Niagara Falls, New York

PLATE
B22

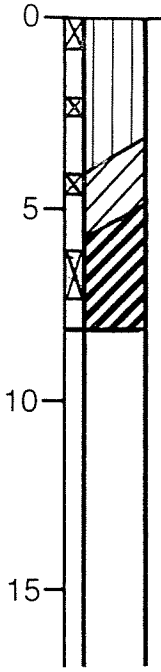
DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
EB.	17497,001.12	KJH	10/11/85		

LOG OF BORING X1

Equipment: Hollow-Stem Auger

Elevation: - Date: 7/3/85

Blows/foot	PID Headspace (ppm)	PID Background (ppm)
6	2.0	1.0
8	2.0	1.0
13	23	0.9
20	3.6	1.0



LIGHT BROWN AND GRAY CLAYEY SILT
loose, moist, trace gravel — Fill

BROWN SILTY CLAY (CL)
stiff, moist

RED-BROWN CLAY (CH)
very stiff, moist

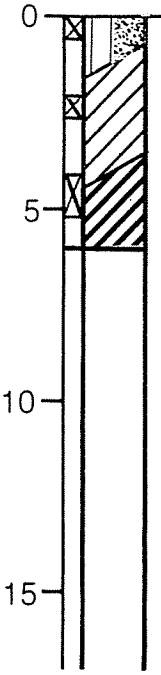
End of Boring - 8 feet

LOG OF BORING X2

Equipment: Hollow-Stem Auger

Elevation: - Date: 7/3/85

Blows/foot	PID Headspace (ppm)	PID Background (ppm)
5	4.3	1.4
10	2.5	1.0
21	6.1	1.0



CLAYEY SILT WITH SOME CAKE — Fill
loose, dry

LIGHT BROWN SILTY CLAY (CL)
stiff, moist

RED-BROWN CLAY (CH)
very stiff, moist, with few silt pockets

End of Boring - 6 feet

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LOGS OF BORINGS X1 AND X2

Pine and Tuscarora Site
Niagara Falls, New York

PLATE
B23

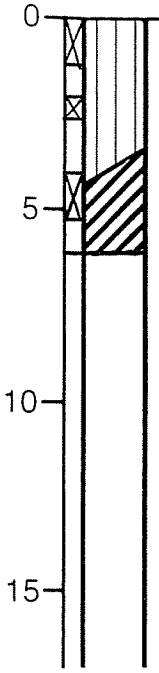
DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
ES.	17497,001.12	KH	10/11/85		

LOG OF BORING X3

Equipment Hollow-Stem Auger

Elevation - Date 7/3/85

Blows/foot	PID Headspace (ppm)	PID Background (ppm)
	3.8(A)	
10	2.7(B)	1.2
12	3.2	1.2
16	36	1.2



GRAVELLY CLAYEY SILT
medium dense, moist, with trace cake (or fly ash) — Fill

RED-BROWN CLAY (CH)
very stiff, moist

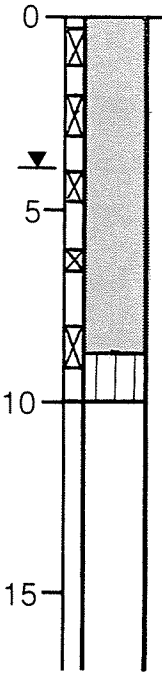
End of Boring - 6 feet

LOG OF BORING Y1

Equipment Hollow-Stem Auger

Elevation - Date 7/9/85

Blows/foot	PID Headspace (ppm)	PID Background (ppm)
	0.5(A)	
14	0.5(B)	0.5
8	0.4	0.4
	1.0(A)	
7	0.9(B)	0.4
5	20	0.3
	5.8(A)	
5	2.0(B)	0.4



MIXED Fill AND FLY ASH WITH SILTY SAND
medium dense, moist
loose below 2 feet
saturated below 4 feet
wood 4.5 to 4.7 feet — Fill

BROWN CLAYEY SILT (ML)
loose, saturated, trace sand

End of Boring - 10 feet

Harding Lawson Associates
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LOGS OF BORINGS X3 AND Y1

Pine and Tuscarora Site
Niagara Falls, New York

PLATE **B24**

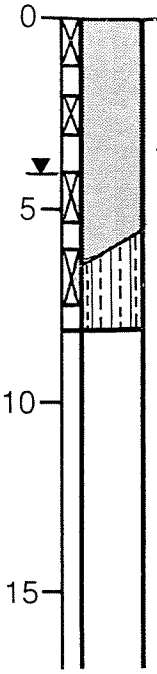
DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
EB.	17497,001.12	KH	10/11/85		

LOG OF BORING Y2

Equipment Hollow-Stem Auger

Elevation - Date 7/9/85

Blows/foot	PID Headspace (ppm)	PID Background (ppm)
24	9.7	0.4
7	3.8	0.4
13	3.1	0.4
5	3.1	0.4



MIXED FLY ASH, AND BROWN SILTY SAND
medium dense, moist
loose 2 to 3.5 feet

Fill

DARK GRAY ORGANIC SILTY CLAY (OL)
soft, saturated

End of Boring - 8 feet

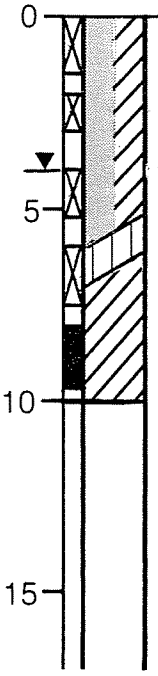
LOG OF BORING Y3

Equipment Hollow-Stem Auger

Elevation - Date 7/9/85

Blows/foot	PID Headspace (ppm)	PID Background (ppm)
	2.3(A)	
10	1.2(B)	1.0
8	1.8	0.9
14	1.7	0.7
	2.9(A)	
6	2.8(B)	0.8

Perm.
13.4×10^{-8} cm/sec



FLY ASH WITH BROWN SILTY CLAY
medium dense with some white cake 1 to 2 feet

Fill

DARK GRAY CLAYEY SILT (ML)
loose, saturated, with wood fibers

GRAY SILTY CLAY (CL)
very stiff, saturated

End of Boring - 10 feet

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LOGS OF BORINGS Y2 AND Y3

Pine and Tuscarora Site
Niagara Falls, New York

PLATE
B25

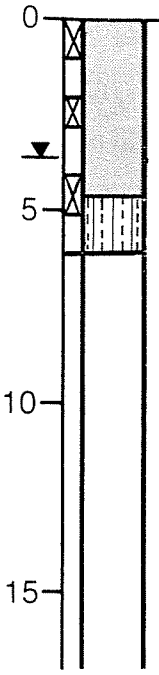
DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
	17497,001.12	KJH	10/11/85		

LOG OF BORING Y4

Equipment Hollow-Stem Auger

Elevation - Date 7/9/85

Blows/foot	PID Headspace (ppm)	PID Background (ppm)
5	1.1	0.8
5	0.8	0.7
	7.8(A)	
2	7.3(B)	0.8



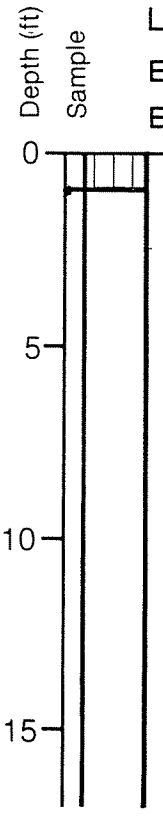
FLY ASH
loose, moist, with some white cake 1 to 2 feet — Fill

DARK GRAY ORGANIC CLAYEY SILT (OL)
loose, saturated
End of Boring - 6 feet

LOG OF BORING Y5

Equipment Hollow-Stem Auger

Elevation - Date 7/9/85



BROWN CLAYEY SILT — Fill
loose, dry
(refusal encountered at 0.75 feet)
End of Boring - 0.75 feet

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LOGS OF BORINGS Y4 AND Y5

Pine and Tuscarora Site
Niagara Falls, New York

PLATE
B26

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
	17497,001.12	KH	10/11/85		

LOG OF BORING Y5A

Equipment Hollow-Stem Auger

Elevation - Date 7/9/85

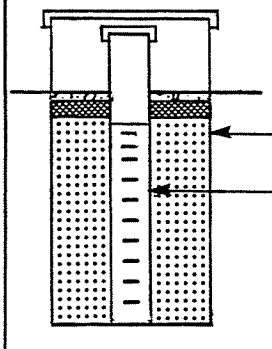
Blows/foot	PID Headspace (ppm)	PID Background (ppm)	Depth (ft)	Sample
17	1.7	0.9	0	

DARK BROWN TOPSOIL AND FLY ASH — Fill

RED-BROWN AND BROWN CLAY (CH)
very stiff, moist
End of Boring - 2 feet

0
5
10
15

MONITORING WELL * DETAIL



LOG OF BORING MW1

Equipment Hollow-Stem Auger

Elevation - Date 7/5/85

Blows/foot	PID Headspace (ppm)	PID Background (ppm)	Depth (ft)	Sample
17	0.6(A) 0.7(B)	0.6	0	

BROWN AND GRAY SILTY CLAY (CL)
saturated below 3.5 feet

BROWN SILTY SAND (SM)
loose, saturated, with trace clay

RED-BROWN SILTY CLAY (CL)
very stiff, moist
End of Boring - 6.5 feet

Note: Augered without sampling to 4.5 feet. Classification based on auger cuttings and nearby boring(s).

0
5
10
15

* For Detail refer to plate 12

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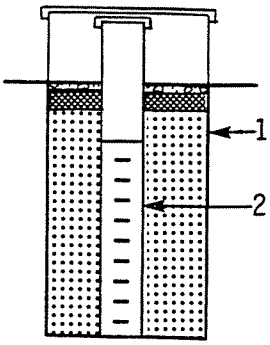
LOGS OF BORINGS Y5A AND MW1

Pine and Tuscarora Site
Niagara Falls, New York

PLATE B27

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
	17497,001.12	KH	10/10/85	BH	7/22/86

MONITORING WELL * DETAIL

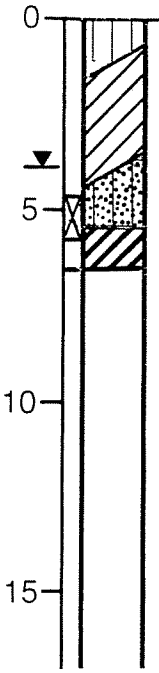


Blows/foot	PID Headspace (ppm)	PID Background (ppm)
20	2.3(A) 2.6(B)	1.3

LOG OF BORING MW2

Equipment Hollow-Stem Auger

Elevation - Date 7/4/85



SANDY GRAVELLY SILT — Fill

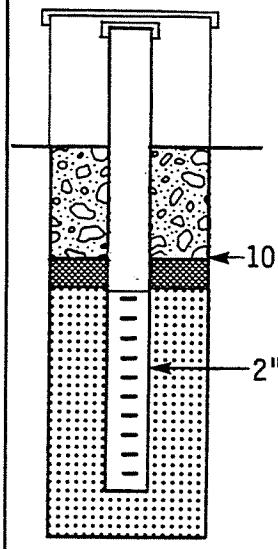
BROWN AND GRAY SILTY CLAY (CL)

LIGHT BROWN SILTY SAND (SM)
medium dense, saturated

RED-BROWN CLAY (CH)
very stiff, moist, with few silt pockets
End of Boring - 6.5 feet

Note: Augered without sampling to 4.5 feet. Classification based on auger cuttings and nearby boring(s).

MONITORING WELL * DETAIL

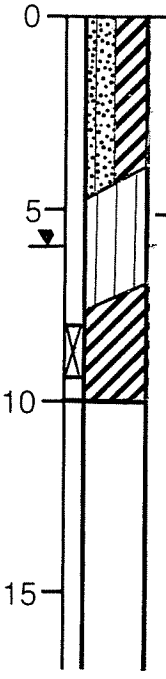


Blows/foot	PID Headspace (ppm)	PID Background (ppm)
15	0.9	0.8

LOG OF BORING MW3

Equipment Hollow-Stem Auger

Elevation - Date 7/5/85



GRAVEL, SILTY SAND AND CLAY — Fill

GRAY SANDY CLAYEY SILT (ML)

RED-BROWN CLAY (CH)
stiff, saturated

End of Boring - 10 feet

Note: Augered without sampling to 8 feet. Classification based on auger cuttings and nearby boring(s).

* For Detail refer to plate 12

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LOGS OF BORINGS MW2 AND MW3

Pine and Tuscarora Site
Niagara Falls, New York

PLATE **B28**

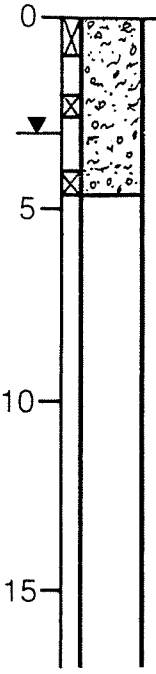
DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
	17497,001.12	KJH	10/11/85	BH	7/22/86

LOG OF BORING MW4

Equipment Hollow-Stem Auger

Elevation - Date 7/6/85

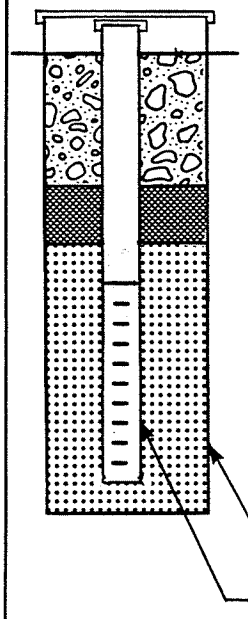
Blows/foot	PID Headspace (ppm)	PID Background (ppm)
24	0.7	0.6
14	6.4	0.5
-	0.5	0.5



GRAY AND BROWN GRAVELLY CLAYEY SAND AND CONSTRUCTION DEBRIS
medium dense, moist
refusal (concrete) encountered at 4.7 feet
End of Boring - 4.7 feet

Fill

MONITORING WELL** DETAIL

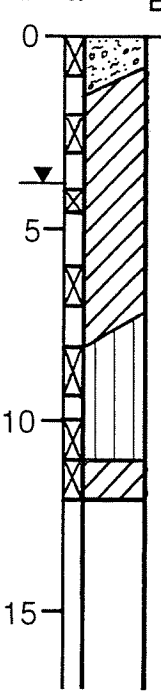


LOG OF BORING MW4A

Equipment Hollow-Stem Auger

Elevation - Date 7/6/85

Blows/foot	PID Headspace (ppm)	PID Background (ppm)
22	0.7(A) 0.6(B)	0.6
7	1.3	0.4
7	0.5	0.4
11	3.9(A) 0.8(B)	0.4
8	0.4	0.4
2	0.8	0.5
WH*	0.7	0.5



CONSTRUCTION DEBRIS
RED-BROWN AND GRAY CLAY WITH SILT POCKETS
stiff, moist

Fill

brickbat 5.7 to 6 feet
white lime grit and charcoal 6.6 to 6.9 feet

DARK GRAY CLAYEY SILT (ML)
loose, saturated, with wood fibers and roots

RED-BROWN SILTY CLAY (CL)
very soft, saturated
End of Boring - 12 feet

WH* - Weight of Hammer

**For Detail refer to plate 12

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LOGS OF BORINGS MW4 AND MW4A

Pine and Tuscarora Site
Niagara Falls, New York

PLATE B29

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
EB.	17497,001.12	DH	10/10/85	DH	7/24/86

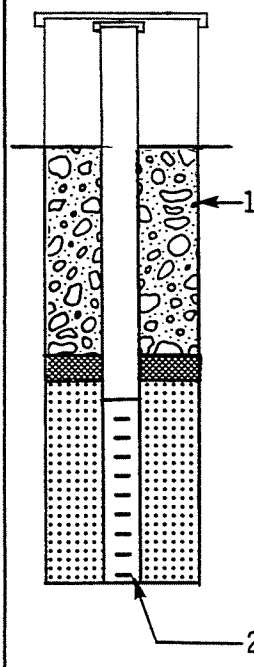
LOG OF BORING MW5

Equipment Hollow-Stem Auger

Elevation - Date 7/8/85

Depth (ft)	Sample	PID Headspace (ppm)	PID Background (ppm)	
0				BROWN SANDY CLAYEY SILT with trace gravel
				Fill
5		0.3	0.5	refusal (concrete) encountered at 5.2 feet
				End of Boring - 5.2 feet
10				Note: Augered without sampling. Classification based on auger cuttings.
15				

MONITORING WELL DETAIL *



LOG OF BORING MW5A

Equipment Hollow-Stem Auger

Elevation - Date 7/8/85

Depth (ft)	Sample	Blows/foot	PID Headspace (ppm)	PID Background (ppm)	
0					BROWN SANDY CLAY AND SILT WITH CONSTRUCTION DEBRIS
					Fill
5		13	0.4	0.4	concrete 5.5 to 5.7 feet
		9	0.5(A) 0.5(B)	0.5	DARK GRAY CLAYEY SILT (ML) loose, saturated, with wood fibers
10		4	0.7	0.4	brown and gray below 10 feet
					End of Boring 11.2 feet
15					Note: Augered without sampling to 5 feet. Classification based on auger cuttings and nearby boring(s).

* For Detail refer to Plate 12

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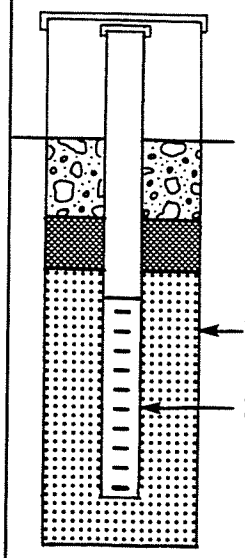
LOGS OF BORINGS MW5 AND MW5A

Pine and Tuscarora Site
Niagara Falls, New York

PLATE **B30**

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
ES.	17497,001.12	KJH	10/11/85	Bd	7/22/86

MONITORING WELL *

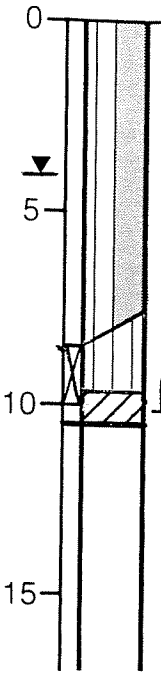


Blows/foot	PID Headspace (ppm)	PID Background (ppm)
4	0.5(A) 0.4(B)	0.3

LOG OF BORING MW6

Equipment Hollow-Stem Auger

Elevation - Date 7/10/85



BROWN CLAYEY SILT WITH CONCRETE, GRAVEL, AND PARTIALLY CEMENTED FLY ASH

Fill

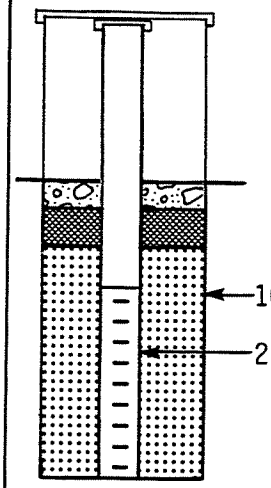
DARK GRAY CLAYEY SILT (ML) loose, saturated

RED-BROWN SILTY CLAY (CL) soft, saturated

End of Boring - 10.5 feet

Note: Augered without sampling to 8 feet. Classification based on auger cuttings and nearby boring(s).

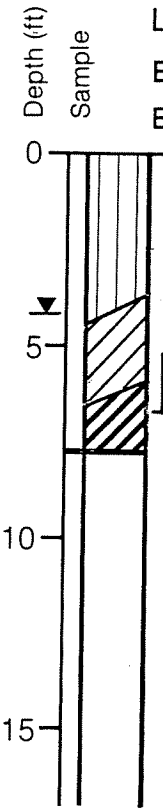
MONITORING WELL * DETAIL



LOG OF BORING MW 7

Equipment Hollow-Stem Auger

Elevation - Date 7/8/85



LIGHT BROWN AND GRAY CLAYEY SILT with trace gravel

Fill

BROWN SILTY CLAY (CL)

RED-BROWN CLAY (CH)

End of Boring - 7.8 feet

Note: Augered without sampling. Classification based on auger cuttings.

* For Detail refer to plate 12

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LOGS OF BORINGS MW6 AND MW7

Pine and Tuscarora Site
Niagara Falls, New York

PLATE **B31**

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
	17497,001.12	KH	10/11/85	BH	7/22/86